

REMARKS

Claims 1 - 18 and 34 - 37 are pending. Claims 1, 3, 17, 18, and 34 have been amended. Claim 37 has been added. No new matter has been introduced. Reexamination and reconsideration of the application are respectfully requested.

In the June 18, 2003 Office Action, the Examiner rejected claims 1, 12, 13, and 34 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,365,076 to Itakura (the Itakura reference). The Examiner rejected claims 2 - 11, 14 - 18, and 35 - 36 under 35 U.S.C. § 103(a) as being obvious over the Itakura reference in view of WIPO disclosure 01/845560 to Peterson et al. (the Peterson reference). These rejections are respectfully traversed.

The present invention is directed to a radiation flood source for nuclear imaging equipment that is lightweight and flexible and minimizes radioactive waste when replacement is necessary. The radiation flood source may include a radioactive deposit contained on an inner substrate, wherein the inner substrate is located in an outer housing. The substrate may have a front surface where the radioactive deposit is deposited to achieve a desired activity pattern. The substrate, which may be radiopaque, may be a flexible sheet of paper, plastic, or other material. The substrate may have a first form factor when contained in said outer housing and may be manipulable to a second form factor smaller than the first form factor when it is removed from the housing.

Independent claim 1, as amended, recites:

A radiation source comprising:

an outer housing having a fastener, said outer housing configured

to be opened;

a substrate removably contained within said outer housing, said substrate having a front surface; and

*a radioisotope fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope.*

The Itakura reference is directed to a radiation image recording apparatus. A radiation recording apparatus 10 comprises an object support base 12, which supports an object thereon, and a sheet housing section 11, which houses a stimulable phosphor sheet 40 therein. The sheet housing section 11 and the phosphor sheet 40 are exposed to radiation 30 which is passed through an object 20. The sheet housing section 11 is provided with a radiation transmitting member 16, which is located on the side close to the object 20, and a radiation energy distribution separating filter 17, which is located on the side remote from the object 20. The radiation transmitting member 16 is a member constituted of material which has a high radiation transmittance, such as C or Al. The radiation energy distribution separating filter is a member provided with a material which is capable of absorbing low energy components of radiation, such as Cu, Fe, Cr, Ni, An, Mo, Sn, or Bi. The sheet housing section 11 is divided by the radiation transmitting member 16 and the radiation energy distribution separating filter 17 into a first sheet housing compartment 13, which is located on the side most remote from the object 20, a second sheet housing compartment 14, which is adjacent to the first sheet housing compartment 13, and a third sheet housing compartment 15, which is located adjacent to the second sheet housing compartment 14 on the side closest to the object 20.

Stimulable phosphor sheets 40 are respectively inserted through a sheet feed-in opening into the second sheet housing compartment 14 and the third sheet housing compartment 14. Radiation 32 produced by a radiation source 30 is irradiated to the object 20 and passes through the object 20 to the stimulable phosphor sheet 40, which is housed in the third sheet housing compartment 15. In this manner, a first radiation image K1 of the object is stored on the stimulable phosphor sheet 40. Radiation 32 passes through the stimulable phosphor sheet 40 and the radiation transmitting member 16 such that the energy of the radiation may not decay. The radiation 32 is thus irradiated to the stimulable phosphor sheet 40 which is housed in the second sheet housing compartment 14. In this manner, a second radiation image K2 of the object is stored on the stimulable phosphor sheet 40, which is housed in the second sheet housing compartment. The first radiation image K1 and the second radiation image K2 are obtained with radiation 32 having approximately identical energy distributions. Thus the two radiation image K1 and K2 can be used for superposition processing. (Col. 9, line 47 - col. 10, line 38).

The Itakura reference does not disclose, teach, or suggest the radiation source in independent claim 1, as amended. Unlike the radiation source in independent claim 1, as amended, the Itakura reference does not concern a radiation source including: an outer housing having a fastener, said outer housing configured to be opened; a substrate removably contained within said outer housing, said substrate having a front surface; and a *radioisotope fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope.*

In contrast, the Itakura reference discloses a radiation image recording

apparatus which includes stimulable phosphor sheets in a sheet housing section, where the stimulable phosphor sheets receive radiation from a radiation source. (Col. 9, *line 50 - col. 10, line 32*). This is not the same as a radiation source including an outer housing, a substrate removabley contained within said outer housing, and a radioisotope fixedly deposited upon said front surface contained within said outer housing because the Itakura reference recording apparatus receives radiation and is not a radiation source. Nor does the Itakura reference disclose a radioistope fixedly deposited upon said front surface because no radioactive substance is deposited anywhere within the Itakura sheet housing section. Accordingly, applicants respectfully submit that independent claim 1, as amended, distinguishes over the Itakura reference.

The Petersen reference does not make up for the deficiencies of the Itakura reference. The Petersen reference is directed to a radiation flood source for quality testing and assurance of radiation detecting devices. (Page 1, *lines 3 - 5*.) A radiation flood source includes a flat substrate having on at least one surface thereof a radioactive coating, wherein the coating comprises a radioactive material and provides for a homogenous and controlled inhomogeneous radiation field. The radiation flood source may further include a protective coating to seal the substrate and its radioactive coating. (Page 4, *lines 8 - 14*.) The substrate is preferably made from a material, which is not electrically conductive. The radioactive coating comprises a colored ink. The radiation flood source may be any desired shape and dimension although circular or rectangular shapes are preferred. (Page 6, *line 3 - page 8, line 15*.)

The Petersen reference does not disclose, teach, or suggest the radiation source in claim 1. Unlike the radiation source of independent claim 1, as amended, the

Peterson reference does not concern a radiation source including: an outer housing having a fastener, said outer housing configured to be opened; a substrate removably contained within said outer housing, said substrate having a front surface; and a *radioisotope fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope.*

Instead, the Petersen reference only discloses a flood radiation source including a coating of radioactive material and an additional protecting coating. (Page 4, lines 8 - 14.) The Petersen reference is not found to disclose any housing and makes no mention of a radiation source having an outer housing; a substrate removably contained within said outer housing; and a *radioactive fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope.* Accordingly, applicants respectfully submit that independent claim 1, as amended, distinguishes over the Petersen reference, alone or in combination with the Itakura reference.

Further, applicants respectfully submit that the Itakura reference and the Petersen reference cannot be combined because there is no teaching, suggestion, or incentive supporting the combination of the Itakura and Petersen references. The Itakura reference does not mention a radiation flood source being housed in its sheet housing section and Petersen reference makes no mention of placing its radiation flood source within a housing section divided by a radiation transmitting member and a radiation energy distribution separating filter. By combining these references, the Examiner has impermissibly used "hindsight" by using the applicant's teaching as a blueprint to hunt through the prior art for the claimed elements and then combine them

as claimed. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

In addition, the combination of the Peterson reference with the Itakura reference would destroy the purpose and intent of the invention disclosed in the Itakura reference. This would be a disincentive for combining the references. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The Itakura reference is directed to a radiation image recording apparatus including a sheet housing section where the sheet housing section includes stimulable phosphor sheets to receive the radiation after the radiation has passed through an object and to form images. The Petersen reference is directed to a radiation flood source. Placing the radiation flood source in the radiation image recording apparatus would destroy the intent of the Itakura reference because the phosphor sheets would be exposed to radiation from the flood source which had not passed through the object. Thus, an image of the object could not be formed on the phosphor sheets because of the additional exposure to the radiation from the flood source. Therefore, the Itakura reference and the Petersen reference are not properly combinable.

Furthermore, the Itakura reference teaches away from the claimed invention. The Itakura reference discloses a sheet housing section including phosphor sheets for receiving radiation. Receiving radiation is the antithesis of the present invention's transmission of radiation by a radiation source. Teaching away from the art is a *per se* demonstration of the lack of *prima facie* obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

Independent claims 3, 17, 18, and 34, all as amended, recite limitations similar to independent claim 1, as amended. Accordingly, applicants respectfully submit that

independent claims 17, 18, and 34, all as amended, distinguish over the Itakura and Petersen references for the reasons set forth above with respect to independent claim 1, as amended.

Independent claim 3, as amended, further distinguishes over the Itakura and Peterson references. Independent claim 3, as amended, recites:

A radiation source comprising:

an outer housing having a fastener, said outer housing configured to be opened;

a substrate removably contained within said outer housing, said substrate having a front surface; and

a radioactive deposit fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope, wherein said substrate is flexible, *said substrate has a first form factor when contained within said outer housing, and said substrate is manipulable to have a second form factor smaller than said first form factor when said substrate is removed from said outer housing.*

The Ikatura reference does not teach, disclose, or suggest the radiation source of independent claim 3, as amended. Unlike the radiation source of independent claim 3, as amended, the Ikatura reference does not concern a radiation source including: an outer housing having a fastener, a substrate removably contained within said outer housing, said substrate having a front surface; and a radioactive deposit fixedly deposited upon said front surface within said outer housing, said radioactive deposit having a radioisotope, wherein said substrate is flexible, *said*

*substrate has a first form factor when contained within said outer housing, and said substrate is manipulable to have a second form factor smaller than said first form factor when said substrate is removed from said outer housing.*

The Ikatura reference discloses a radiation image recording apparatus which includes stimulable phosphor sheets in a sheet housing section, where the stimulable phosphor sheets receive radiation from a radiation source. This is not the same as a radiation source including a substrate, wherein *said substrate has a first form factor when contained within said outer housing, and said substrate is manipulable to have a second form factor smaller than said first form factor when said substrate is removed from said outer housing*. Accordingly, applicants respectfully submit that independent claim 3, as amended, further distinguishes over the Ikatura reference.

The Petersen reference does not make up for the deficiencies of the Ikatura reference. The Petersen reference discloses a flexible substrate. (*Page 6, lines 3 - 13*). The Examiner states that it would have been obvious to have a first and second form factor with a substrate that is made of flexible material. (*Office Action, page 3*). Applicant asserts that while Petersen may disclose a flexible substrate, the Petersen reference does not disclose that *said substrate is manipulable to have a second form factor smaller than said first form factor*.

The Petersen reference does not teach that the substrate is manipulable to have a second form factor. Flexible means that the substrate can be bent and can return to an original shape. This is not the same as having a second form factor, i.e., or being malleable, where the substrate has the ability to change its form factor to a second form factor. Accordingly, applicants respectfully submit that independent claim 3, as

amended, further distinguishes over the Petersen reference, alone or in combination with the Ikatura reference, if the references are combinable.

Independent claim 37 recites similar limitations to independent claim 3, as amended. Accordingly, applicants respectfully submit the independent claim 37 further distinguishes over the Ikatura and Petersen references, alone or in combination.

Claims 2 - 16, and 35 - 36 all depend directly or indirectly from independent claims 1 and 34, respectively. Accordingly, applicants respectfully submit that claims 2 - 16 and 34 - 35 distinguish over the Itakura and Petersen references for the reasons set forth above with respect to independent claim 1, as amended.

///

///

///

///

///

///

///

///

///

///

///

///

///

///

Applicants believe that the claims are in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

PILLSBURY WINTHROP LLP

Date: September 11, 2003

By: Mark R. Kendrick  
Mark R. Kendrick  
Registration No. 48,468  
Attorney for Applicant(s)

Date: September 11, 2003

By: Roger R. Wise  
Roger R. Wise  
Registration No. 31,204  
Attorney For Applicant(s)

725 South Figueroa Street, Suite 2800  
Los Angeles, CA 90017-5406  
Telephone: (213) 488-7100  
Facsimile: (213) 629-1033